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The Sig

Southwestern Oklahoma State University

NEWS FROM THE
SCHOOL OF PHARMACY

Summer 1978



FROM THE EDITORS.....

One of the big issues in recent years in pharmacy education has been the controversy over whether or not the pharmacy degree program of the future should become solely the Pharm.D. degree or should remain a combination of offerings. In fact, at its annual meeting this summer in Orlando, Florida, the American Association of Colleges of Pharmacy will vote on an issue entitled "Types of Pharmacy Personnel Required to Meet Society's Future Needs."

The merits of both approaches have been widely discussed. Virtually all of the major pharmacy organizations and special interest groups have issued formal statements addressing their particular stands concerning the "Pharm.D. versus B.S." issue. However, one group which we feel has been poorly represented has been the practicing pharmacist. Therefore, we are offering a partial solution to the problem. As you will notice, the center page of this issue of *The Sig* is a survey form which deals with the above controversy.

Your courtesy in filling out and returning the survey form to us will be greatly appreciated. Results will be tabulated and published in a future issue of *The Sig*.

Hopefully the results of this survey will give pharmacy educators at Southwestern an idea of the practicing pharmacist's feelings about some of these proposed changes. If you would like to add some personal comments to the bottom of the survey, please feel free to do so.

A NEW NAME AND A NEW LOOK

By DEAN W. L. DICKISON

The year of 1978 will be remembered as the year Southwestern reorganized its antiquated operational structure. Before and since University status was conferred by legislative action in 1974, this institution has had two undergraduate schools; the **School of Pharmacy** and the "School of Everything Else."

Effective July 1, 1978, the old "School of Everything Else" was dismembered to form three new schools. These schools with their new academic deans, are as follows: (1) **School of Business**, Dean Roger Egerton; (2) **School of Education and Psychology**, Dean Earl Reynolds, and (3) **School of Arts and Sciences**, Dean Donald Hamm.

Coincidentally, all health care pre-professional and degreed programs were brought together with the School of Pharmacy into a newly created health career school known as the **School of Pharmacy, Nursing and Allied Health**.

We are enthusiastic about this reorganization, and believe pharmacy and our other health career programs will be mutually strengthened. The new baccalaureate curriculum in nursing is developing rapidly into a fine program. The programs in Medical Technology, Medical Records Administration, and Administration of Allied Health are attractive to students. In our judgement, Southwestern has taken an appropriate and highly essential step toward being **THE** health career educational institution for the great Southwest.



DR. HUERTA [center] gives advice concerning an experimental procedure.

MODERN MEDICINAL CHEMISTRY

By Dr. Pete Huerta

The relevancy syndrome that descended on Medical and Pharmacy Schools in the late sixties and early seventies did not spare the area of Medicinal Chemistry. Therefore, the need to restructure the Medicinal Chemistry courses became evident if we were to meet these new demands.

In 1973 two Medicinal Chemistry courses were changed from the previous combination of a three hour Inorganic Medicinal Chemistry course and a five hour Organic Medicinal Chemistry course to the current courses which include a three hour Medicinal Chemistry I course (3 lectures per week) and a four hour Medicinal Chemistry II course (3 lectures per week and one 3 hour lab per week).***

In these courses most of the compounds discussed are organic medicinal agents and the main emphasis is placed on the relationship that exists between the physicochemical properties of these medicinal agents and their respective physiological response. This physiological response can be discussed in terms of the effect that the agent has on the body and conversely, the effect that the body has on the drug. These important parameters are studied in detail to demonstrate that certain molecular modifications affect the activity, metabolism, half-life, excretion, and blood levels of these medicinal agents.

The lecture and laboratory material is centered around pharmaceutically available and therapeutically useful compounds. It is impossible to discuss every drug that is available but some selective groups are included which represent most of the important therapeutic classes.

[Continued on Page 4]

"In this editorial, clinical faculty members Tom Davis and Dave Evans explore the concept of Pharmacy professionalism from a real-world practitioner point of view."

PROFESSIONALISM??

by Dr. Tom Davis
and David Evans

Professionalism is a difficult concept to communicate or define; because the term involves so many facets. Professionalism can be learned, but it is difficult to teach; because a true understanding of the term must come from within. Many people practice pharmacy and other professions without a true understanding of the concept. An important part of professionalism involves caring, and one question which must be asked and answered is: "Have we as a profession lost this aspect from our practice?"

Not long ago at a meeting of the Allied Health Professions Section of the Arthritis Foundation, a panel of arthritic patients was involved in a discussion regarding the type of care they received from different health professions. Pharmacists received a unanimously bad rating from the arthritic patients on the panel. The reasons stated by the patients were that the pharmacists never talked to them about their medications; that no one had ever asked if they could remove the child resistant tops (one patient was obviously crippled by the disease); and that some patients had been embarrassed by pharmacists in front of other people when they asked for non-child resistant containers. Other complaints were also voiced by the arthritic patients.

How much "professionalism" does it require to recognize an arthritic patient, either by the drugs prescribed or by the physical appearance of the patient, who might have trouble opening a container? The arthritic patients involved on the panel were not aware they could sign a consent form in order to receive more easily opened containers.

At a Heart Association meeting, some of the same complaints were voiced by cardiac patients that they were not being counseled on their medications by pharmacists.

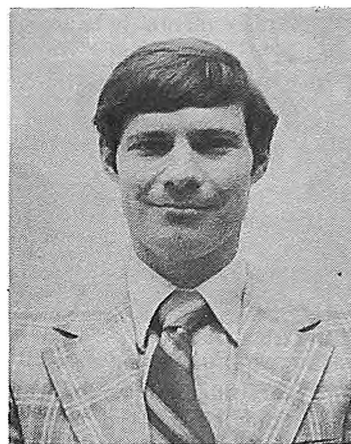
If the above examples are any indication of the way pharmacy is practiced by some practitioners, then one might wonder if we have lost the facet of caring from our practice. If this is true, what about the future of pharmacy?

Edward P. Claus, late Dean of Ferris State School of Pharmacy, said about the future of pharmacy:

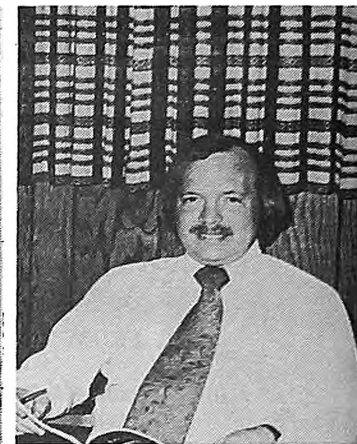
If we as pharmacists do not change our manner of thinking we may find that someone may change it for us. If we in our practice cannot or will not begin to emphasize our professional roles, we may find no professional opportunities left.

The question being asked today in pharmacy is not "Professionalism--yes or no?" but "Professionalism--how much?" Today the largest part of the pharmacist's time is taken in the dispensing of medications. However, with today's potent drugs, there is more to dispensing than just counting, pouring, and labeling. The pharmacist has the obligation to not only see that the proper medication is dispensed, but also to make sure that the patient understands the proper use of the medication and any other questions concerning the drug.

It has been estimated that 50 per cent of the people who receive prescription medication exhibited some error in the taking of that medication. The pharmacist must assume the professional responsibility to see that the patient understands all that he should about the medicines in question. The quality of pharmaceutical services provided will be improved if the patient complies with his prescription exactly as prescribed for the



DAVE EVANS, R.Ph.



TOM DAVIS, M.D.

disease state, and he is more likely to do so if he receives complete instruction and information about the use of his medications. It is not enough to just inform the patient with factual material, but this material must be presented in a manner which the patient can understand.

In this editorial we have attempted to point out a most important professional role for today's pharmacist--a role which is directed to better care of his patients. We can only hope that each and every pharmacist will evaluate his professionalism to pharmacy for as the late Charles F. Kettering, General Motors Corporation Vice-President, has stated: "We should all be concerned about the future because we will have to spend the rest of our lives there."

Tom W. Davis, M.D.
Associate Professor of
Clinical Pharmacy

David L. Evans
Instructor of Clinical
Pharmacy

ALUMNI NEWS

Three Southwestern alumni are candidates for state office. They are: Bryan Potter, Elk City (1957) for State Representative; Rodney McCrory, Chandler (1974) for State Senator, and Kenneth Eck, Healdton (1950) for Lieutenant Governor.

Paul Peterman (1967) has gone into partnership with Hugh Carlin, owner of Carlin Rexall Drugs in Chillicothe, Missouri.

ANSWER TO THE CLINICAL QUIZ:

Since the patient exhibits characteristics of inflammatory acne, she should be referred to a physician.

SURVEY 1978: TYPES OF PHARMACY PERSONNEL REQUIRED TO MEET SOCIETY'S FUTURE NEEDS

What type of pharmacy school degree program best meets society's health care needs for today? What type of degree program will best meet society's health care needs in the future? Now you have the opportunity to voice your opinion in this issue of the Sig.

INSTRUCTIONS: Circle or otherwise indicate the appropriate response for each question. Fold and staple or tape together and mail to the address on the reverse side.

1. Age: a. 21-30
b. 31-40
c. 41-50
d. 51-60
e. Over 60
2. Type of Pharmacy Operation: a. Community Pharmacy
b. Hospital Pharmacy
c. Industry
d. Other (specify) _____

3. Year of graduation
(first pharmacy degree)
4. Sex: Male Female

5. First Pharmacy Degree: a. No more than 2 years of pharmacy education
b. Ph.C.
c. B.S. (four years)
d. B.S. (five years)
e. Pharm.D.
f. Other (specify)

6. In your opinion, which of the degree programs listed below best meets the needs of pharmacy practice **today**?
- B.S. only
 - B.S. with optional Pharm.D.
 - Pharm.D. as first awarded degree
 - Other (specify)

7. In your opinion, which of the degree programs listed below best prepares the student to meet the obligations of pharmacy practice over the **next 40 years**?
- a. B.S. only
 - b. B.S. with optional Pharm.D.
 - c. Pharm.D. as entry-level degree
 - d. Other (specify)

8. If the highest degree you currently hold is a B.S., would you consider pursuing a Pharm.D. if it becomes the only degree offered by colleges of pharmacy if correspondence and other home study programs are developed.

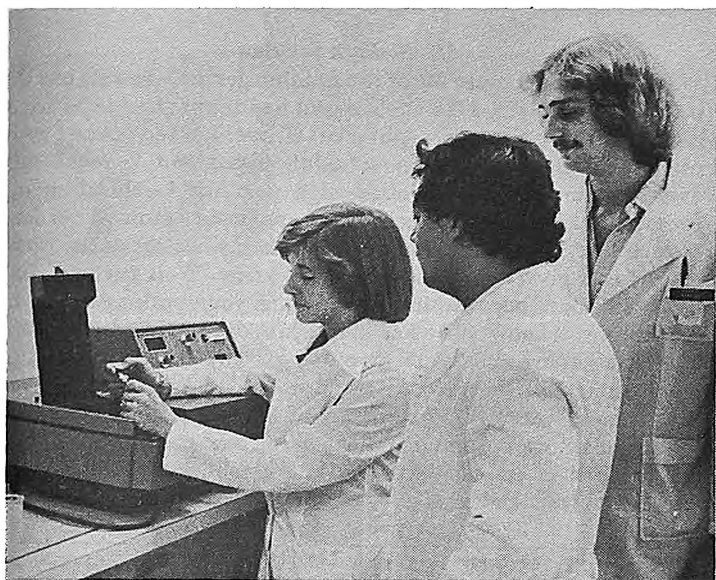
NO

UNDECIDED

9. If the highest degree you currently hold is a B.S., which of the following most closely matches your opinion of the Pharm.D. degree?
- a. Useless degree
 - b. A degree with limited application
 - c. Limited application today, but insurance for the future
 - d. A degree with several useful applications
 - e. A degree with widespread application

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DRUG ANALYSIS

By Dr. Gus Ortega

The Federal Food, Drug, and Cosmetic Act defines a drug as:

- (1) articles recognized in the official United States Pharmacopoeia, official Homoeopathic Pharmacopoeia of the United States, or official National Formulary...; and (2) articles intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease in man or other animals; and (3) articles (other than food) intended to affect the structure or any function of the body of man or other animals; and (4) articles intended for use as a component of any articles specified in clause (1), (2), or (3)...

Certainly, Pharmaceutical Analysis is comprised of those procedures necessary to determine the identity, strength, quality, and purity of such articles. The time permitted, 2 lectures per week, does not allow for a through discussion of the most widely used analytical techniques currently used or even the more elaborate and newer techniques. Therefore, no attempt is made to cover any technique in depth. The minimal essential theory is presented with some emphasis on the handling of the mathematics involved. After a description of the analytical technique, its applications to bioavailability, drug action, and pharmacy practice are presented. The analytical techniques discussed are Titrimetry, Chromatography, Spectroscopy, and Radiochemistry.

There has been a change in emphasis in the laboratory from quantitative analysis to a quantitative comparison approach using proprietary drugs whenever possible. The following is a list of the experiments conducted in the laboratory with a brief description of their purpose:

Standardization of NaOH and HCl Solutions--

This classical experiment has a two-fold purpose. First to reintroduce the student to the use of the analytical balance and the buret. More importantly, this experiment determines the normality of the two solutions which are used in the following experiment.

Antacid Effectiveness--

Commercially available antacid preparations, up to 45 different products, are assigned. The students perform the official U.S.P. Antacid Effectiveness assay on their product, determining the number of mEq of acid neutralized by the sample. Further, the students are asked to determine the theoretical number of mEq of antacid present in their product and compare it to the number determined experimentally.

An In Vitro Evaluation of Liquid Antacids--

The second antacid evaluation experiment was adapted from the *New England Journal of Medicine* and results in a comparison of liquid preparations similar to Table 1 in the *Handbook of Nonprescription Drugs*, 5th Ed., page 6.

An In Vivo Simulation of Antacid Efficacy--

In the final antacid experiment attempts are made to simulate *in vivo* gastric conditions. A dose of antacid is added to a volume of dilute HCl and more acid is dripped in continuously. Using a pH meter, the students observe duration of effectiveness provided by their product.

After these three experiments the students are asked to determine which antacid they would personally recommend to the public.

Single Dose Assay of Iron Containing Pharmaceuticals--

This experiment introduces the students to the field of spectroscopy. Over-the-counter products containing ferrous sulfate, ferrous gluconate or ferrous fumarate are analyzed for their iron content via visible spectroscopy.

Ultraviolet Analysis of Trimethoprim-Sulfamethoxazole Mixtures--

Septa tablets are used to acquaint the students with UV spectroscopy. The active ingredients are isolated and separated and the per cent labeled amount determined for each tablet.

We wish to thank Burroughs Wellcome Company for providing us with samples of pure Trimethoprim and Sulfamethoxazole and their analytical procedure which we have modified slightly for student use.

Evaluation of Sunscreen Aents--

Using UV spectroscopy the students compare twelve sunscreen and suntanning products. The range of absorption and the molar absorptivity (range and degree of protection) are determined and compared. The products are categorized into those providing protection from sun burn and those allowing quick tan with little protection.

Dissolution Studies on Acetaminophen--

Five popular acetaminophen products are studied for their dissolution characteristics using a dissolution apparatus and UV spectroscopy. The students are asked to extrapolate the data to absorption rates and blood levels.

The recent acquisition of a Sartorius Absorption Simulator with synthetic gastric and intestinal barriers will soon allow the students to compare absorption rates directly and to study the effect of changes in pH on the rates of absorption and blood levels.

SUGGESTED TREATMENT FOR HONEY-COMBED RINGWORM

THE FOLLOWING SIMPLE REMEDY
IS WARRANTED TO CURE ANY CASE:
TAKE A GOOD HAVANA CIGAR--ONE
THAT MAKES WHITE ASHES. SMOKE
THE CIGAR AND SPREAD ALL OVER
THE RINGWORM AND AROUND THE
EDGES, AFTER FIRST HAVING DAMP-
ENED THE SURFACE SO THAT THE
ASHES WILL STICK. KEEP THE ERUP-
TION CONSTANTLY COVERED IN THIS
WAY.-----

Modern Medicinal Chemistry.....

[Continued from Page 1]

The drugs are studied in groups based on their therapeutic classes. These groups are discussed with the understanding that each structurally related compound or group of compounds will have overlapping activities, side effects, and drug interactions. The approach is to provide a fundamental nucleus that the student can start building upon while attending Pharmacy school. He can continue to expand this knowledge after he begins to practice his profession. For example, in most cases a student or a pharmacist may relate the therapeutic use or side effects of a new drug to previous drugs simply by noticing the molecular structure.

The laboratory is structured to reinforce the lecture material so it follows the didactic material very closely. The student can learn by associating what he does manually in the laboratory to the theoretical considerations discussed in class. For example, he is able to relate the acidic, basic or neutral properties of some pharmaceutically available dosage forms to physical incompatibilities and to the effect that the pKa of a drug (via the Henderson-Hasselbach equation) has on the penetration of the blood-brain barrier, absorption, distribution, renal tubular reabsorption, and excretion.

Pharmacists are repeatedly called upon to offer their expertise in the fight against drug abuse; therefore, the Medicinal Chemistry laboratory includes some experiments which deal with the routine screening and identification of Marijuana, and some other drugs of abuse such as narcotics, sedative hypnotics, and amphetamines. The emphasis is not to produce a drug analyst but to allow the student to be exposed to some of the current information involving drug abuse.

Our current Medicinal Chemistry I and Medicinal Chemistry II courses have met the relevancy challenge very satisfactorily and offer ample opportunities for the student to relate some fundamental medicinal chemistry to many clinical situations at the retail and/or institutional level.

***Drug Analysis is not discussed in this article because it is being covered under another topic.

FACULTY DOINGS.....

Several of our faculty earned promotions.....Dr. Scruggs received tenure.....Dr. Nithman and Dr. Reichmann promoted to Associate Professor.....Dr. Keller was listed in the 40th edition of *Who's Who in America* (1978-1979).....Dr. Juneau and Dr. Taber have had an article entitled "Quaternary Acetate and Propionate Esters of 3-Hydroxyquinolizidine" accepted for publication in the *Journal of Pharmaceutical Sciences*.....Dr. French spoke recently at the Arkansas State Pharmacist's Association Annual Convention.....Dr. Keller was appointed Chairman of the Committee on Sponsorships and Endorsements and also elected to the Board of Directors and to the Executive Committee of the American Heart Association-Oklahoma affiliate.....Dr. Reichmann received the Distinguished Service Award from Alpha Phi Omega, the national service fraternity.....Dr. Reichmann also gave the baccalaureate address at Merritt High School in Elk City.....Mrs. Clark was the faculty delegate to the annual AACP in Orlando.....Dr. Keller was the representative for the Council of Deans at the convention.....Dr. Keller also developed and appeared in a 30-minute television program on "Hypertension--The Disease and Its Treatment".....Among his many trips in the interest of the School of Pharmacy, Dean Dickison recently traveled to Rockville, Maryland, to sit on a Panel Review of Topical Analgesic OTC's for the Food and Drug Administration.

CLINICAL QUESTION

by

Dr. Sadeqh Javidan

Judy Collins, a member of the hamburger'n Coke set, has this turned-on problem. Like she's a cool head, but she keeps breaking out in these super zits (pimples) all over her face. And I mean really wild pimples, you know. . .full of pus and. . .yeech. And even on her forehead. Nobody can see her forehead though because her hair cleverly conceals it, as it does most of her face. She says her hair is kinda greasy, but then what cat doesn't have greasy hair nowadays? It's just in, you know. Well anyhow, Judy can't talk now because her friend is in your parking lot in his machine, you know, his wheels. She just dropped in for a pack of cigarette papers and to ask if you've got any super soap or stuff or anything like that, so she could use it. . .you know. Herman (her friend, who else?) being sort of a swinger himself doesn't like the institutional smell of those medicated cosmetics, so don't recommend Clearasil. It's part of the establishment, you know. Oh, by the way, charge it.

- A. Preferred or recommended (germicidal shampoo)
- B. Directions to Judy
- C. Similar or equivalent product
- D. Advantages of A vs. C.

[Answer to question on Page 2.]

Direct all correspondence to: Editor, **The Sig**; School of Pharmacy; Southwestern Oklahoma State University; Weatherford, Oklahoma 73096.

The statements and opinions appearing in **The Sig** do not necessarily represent those of the editors, The School of Pharmacy, or Southwestern Oklahoma State University, except when stated as such.

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